

Notice of Allowability

Application No.

10/693,842

Examiner

Patricia Hightower

Applicant(s)

NOMURA MAMIKO ET AL

Art Unit

1711

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment/repsonse filed November 30, 2004.
2. ☒ The allowed claim(s) is/are 1-7.
3. ☒ The drawings filed on 24 October 2003 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
- * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

Reasons For Allowance

The following is an examiner's statement of reasons for allowance:

In view of the applicants' response filed November 30, 2004 in which it was established that the prior art did not teach as claimed ***the resin composition*** containing ***a polyimide precursor*** denoted by formula (1) and a photosensitizer, ***wherein A² in formula (1) is an alicyclic compound selected from either one of cyclohexane denoted by the chemical formula (3) or 4,4'-methylenebiscyclohexane denoted by the chemical formula (4), and wherein the polyimide precursor has an imidization degree of 7.5% or more and 36% or less as determined by equation (a); Equation (a) : $(PS_1/PS_2) / (PI_1/PI_2) \times 100$, wherein PS₁ and PI₁ represent the absorbance of the imide ring before and after complete imidization, PS₂ and PI₂ represent the absorbance of the chemical structure A² in formula (1) before and after complete imidization***; wherein imidization of no less than 7.5% in the polyimide precursor is selected to have good resistance to the developing solution of the unirradiated portion of the polyimide precursor while imidization of no more than 36% in the polyimide precursor is selected so that a resin film can be easily prepared from the composition; a process of forming a resin film formed from the resin composition comprising the polyimide precursor denoted by formula (1) comprising coating an object with the resin film exposing the resin film to light to form a latent image, developing the resin film and heating to imidize the polyimide precursor; and methods for preparing a resin composition comprising (i) reacting 1,4-diaminocyclohexane or 4,4'-methylenebis(cyclohexylamine) with an aromatic dianhydride in a solvent to form a salt,

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(ii) reacting a resin solution containing the salt at a temperature of 80°C – 150°C, (iii) reacting the resin solution at a temperature of 160°C – 250°C to a desired imidization degree and (iv) adding a photosensitizer to the resin solution to give a resin composition all are allowable.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Prior Art

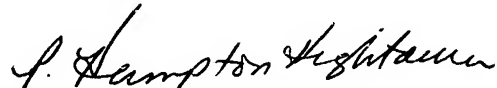
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. These references are cited to show the state of the art of photosensitive resin compositions containing polyimide precursor/polyamic acid and a photoacid generator/ photosensitizer; Jung, Tokoh and Maeda.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patricia Hightower whose telephone number is (571) 272-1073. The examiner can normally be reached on M-F from 9:30 A.M. - 6:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on (571) 272-1078. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


P. Hampton Hightower
Primary Examiner
Art Unit 1711

P. Hightower: ph
February 19, 2005